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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,421	12/12/2003	Ihab M. Hekal		2312

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LAW OFFICES OF WILLIAM H. HOLT
12311 HARBOR DRIVE
WOODBRIDGE, VA 22192

EXAMINER	
CHAWLA, JYOTI	

ART UNIT	PAPER NUMBER
1761	

DATE MAILED: 08/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/735,421	HEKAL, IHAB M.	
	Examiner	Art Unit	
	Jyoti Chawla	1761	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-11 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-11 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(I) Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Kobayashi et al. (JP 05003752) (Abstract and Machine translation).

Kobayashi teaches packaging meat in a modified atmosphere containing carbon monoxide (CO) in a confined container and then introducing the compound into the container to absorb CO, i.e., hemoglobin and/ or myoglobin, which are meat pigments and absorb CO (Abstract and Machine Translation Paragraphs 0008-0009, 0012-0015 and 0019-0022). Thus Kobayashi anticipates applicant's recitation of claim 1.

(II) Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Shaklai et al (US 6042859).

Regarding claim 1, Shaklai et al, hereinafter Shaklai, teaches packaging raw meat under negligible oxygen atmosphere by exposing raw meat to a gas consisting essentially of carbon monoxide (CO) (Column 4, lines 58-62 and Column 3, lines 49-55). The reference also teaches that it has been known in the art to expose fresh meat

to CO and then introduce a compound to absorb CO, i.e., hemoglobin or myoglobin, which are meat pigments. Thus Shaklai anticipates applicant's recitation of claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

Determining the scope and contents of the prior art.
Ascertaining the differences between the prior art and the claims at issue.
Resolving the level of ordinary skill in the pertinent art.
Considering objective evidence present in the application indicating obviousness or nonobviousness.

(A) Claims 1, 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (AU 9218559 A) (Abstract and Machine translation), in view of Merriman et al (US 2003/0054072).

Kobayashi et al, hereinafter Kobayashi teaches addition of CO to the meat to improve quality and also to prevent the discoloration of meat and fish upon storage (Abstract and Translation paragraph 0008 and 0009) as recited by the applicant. Kobayashi teaches

that the meat is exposed to CO for some time such as 2-6 hours depending on the cut and size of meat and later removed (Translation paragraphs 0012-0015). The hemoglobin or myoglobin (pigments in meat) in meat and fish are compounds that absorb CO and change to metmyoglobin (Translation paragraphs 0019-0022). The reference also teaches that the package containing meat after the removal of CO may be filled with nitrogen or carbon dioxide (Abstract and Translation paragraphs 0023-0025) as recited by the applicant in claim 1.

Regarding claim 1, hemoglobin and myoglobin, pigments present in the meat, are compounds that absorb CO present in the package. Kobayashi reference further teaches removal of excess CO by the physical means.

Kobayashi also does not teach the addition of a separate sachet (pack) inside the main food package that would contain the CO and /or O_2 absorber as recited by the applicant in claims 9-11. Therefore, one of ordinary skill in the art would look for other ways for removal of CO from a mixture of gases.

Merriman et al, hereinafter Merriman, teaches a modified atmosphere package especially for meats, where the meat is packaged in a confined container. The atmosphere in the container taught be Merriman, is modified by physically removing the gases and forcing a modified atmosphere containing CO_2, N_2 and CO, sealing the package with an oxygen scavenger to absorb the residual O_2 in the package after it has been sealed to ensure microbial safety (Application Publication paragraphs 0010 and 0054). Meat in the package taught by Merriman, contains hemoglobin and myoglobin to absorb CO and make carboxyhemoglobin/ carboxymyoglobin. Merriman further teaches

that it has been known to add oxygen (gas) scavenger/ absorber sachet (pack) inside a food package in such away that the sachet does not come in contact with the food (Application Publication figures 2, 3, 6 a-d, item 28) as recited in claim 9. According to Merriman, the oxygen absorber could be packaged separately, which could be further activated by an accelerator that comprising a copper compound (Application Publication paragraphs 0054 and 0073) as recited in claims 10 and 11. The oxygen uptake accelerator taught by Merriman, is preferably water or aqueous solutions of acetic acid, citric acid, sodium chloride, calcium chloride, magnesium chloride, copper or combinations thereof (Paragraph 0054 and figure 2, item 28). Therefore, the oxygen scavenger package with the accelerator, as taught by Merriman, would contain copper compound in the presence of chloride salts, which would react with each other and form a copper chloride salt in the solution as recited in claim 2. Thus Merriman teaches of an oxygen scavenger pack, with activator, that would have copper chloride (i.e., cuprous chloride) and would be capable of absorbing CO.

Regarding claims 1, 9-11, it has been known to pack food in a package with modified atmosphere containing CO (Kobayashi) to increase the shelf life and preserve good color. It has also been known to remove excess gases such as CO and /or O_2 from a food package by physical means such as vacuum pump, as taught by Kobayashi, or by a combination of physical and chemical means, as taught by Merriman. One of ordinary skill in the art would have been motivated to include additional chemical means of removing gases, such as by using absorber/scavenger packages (with activator chemicals), to food packages, as taught by Merriman, to ensure a rapid and complete

removal of residual volume of unwanted gases from food packages and also to extend the shelf life of food products in modified packages. One of ordinary skill in the art would have been further motivated to put the gas absorbing compound in a separate package and not have the chemicals in direct contact with the food, as taught by Merriman, to ensure food safety, which is also the intent of the applicant in claims 9-11.

(B) Claims 2-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi, in view of Merriman as applied to claims 1, and 9-11 above, further in view of combination of Matsuura et al. (US 4818255) and Hirai et al. (US 4460384).

Kobayashi and Merriman have been applied to claims 1, and 9-11 above.

Kobayashi and Merriman teach exposure of food to CO for prolonging the shelf life and obtaining a desirable color of food. The references also teach removal of CO and / or O_2 after a few hours by either vacuum (physical) or chemical means (scavenger pack). Kobayashi, modified by teachings of Merriman, teaches that the oxygen scavenger package includes sodium, calcium and magnesium chlorides along with copper as an activator. However, the references do not include specific copper and aluminum compounds, such as cuprous bromide, cuprous aluminum chloride etc., to absorb CO present in the package as recited by the applicant in claims 2-8. Therefore, one of ordinary skill in the art would have been motivated to turn to a known reference in the art regarding other copper based compounds that have been used for removal of CO,

such as Matsuura et al and Hirai et al that teach compounds and methods for the separation of carbon monoxide (CO).

Matsuura et al, hereinafter Matsuura, teaches gas separation materials and discloses that aqueous solutions of cuprous chloride or cuprous aluminum chloride have been used to absorb CO (Column1, lines 35-37, 52-56, 60-62). Matsuura also teaches that the copper salts used can either be monovalent (Cuprous), or bivalent (cupric) salts. The reference includes cuprous chloride, cuprous bromide and cupric sulfate among preferred staring materials for the separation and purification of CO (Column 4, lines5-48). Although Matsuura does not include cuprous sulfate in the list of preferred copper compounds to use, the reference teaches that cuprous as well as cupric compounds can be used to absorb CO, thus including cuprous sulfate. Matsuura further teaches that the removal of CO, as well as O_2 can be done using the same material. Since Matsuura teaches that any copper salt, monovalent or divalent, can be used as a starting material to absorb CO and since Matsuura recites use of copper chloride, bromide and sulfate, therefore, Matsuura teaches the copper compounds recited by the applicant in claims 2-4.

Similarly Hirai et al., hereinafter Hirai, teaches a solution to the same problem of removal of CO from a mixture of gases, by using a copper compounds. The process involved contacting CO with a copper chloride suspension in hydrochloric acid (Column 1, lines 42- 48). Hirai further teaches contacting the gas mixture with (a) at least one copper (I) halide, i.e., cuprous chloride (CuCl), cuprous bromide (CuBr), cuprous iodide etc., (b) at least one aluminum (III) halide, i.e., aluminum tri-chloride ($AlCl_3$), aluminum

tri-bromide ($AlBr_3$), etc., (c) at least one compound with two benzene nuclei. Hirai also teaches that the halides of copper and aluminum can be either used alone or in combination (Column 2, lines 60-65 and Column 4, lines 28-36). Cuprous halides, i.e., CuCl or CuBr when combined with $AlCl_3$ or $AlBr_3$, in acidic medium would form complexes such as $CuAlCl_3$ (cuprous aluminum tri-chloride) and HCl (hydrochloric acid) OR $CuAlCl_4$ (cuprous aluminum tetrachloride) and $CuAlBr_3$ (cuprous aluminum tri-bromide) and HCl (hydrochloric acid) OR $CuAlBr_4$ (cuprous aluminum tetra bromide) as recited by the applicant in claims 5-8. Since Hirai does teach that it was known to separate CO from other gases or chemicals by using copper and aluminum halide compounds, either separately or combined together, therefore, Hirai, teaches the separation of CO by using cuprous compounds recited by the applicant in claims 2, 3, 5-8.

Matsuura and Hirai both teach that any copper salt can be used as a starting material to absorb CO, including copper and aluminum halides, either alone or in various combinations, as recited by the applicant in claims 2-8. Matsuura further teaches that the copper salts are also effective in removal of oxygen (Column 4, lines 5-10). Since modified Kobayashi includes a separate O_2 scavenger with copper based activator and because Matsuura and Hirai teach that any copper / copper aluminum halide salt could be used to absorb CO, one of ordinary skill in the art would have been motivated to introduce copper and/ or aluminum salt(s) (preferably halide compounds), such as cuprous chloride, cuprous bromide, cuprous aluminum tri-chloride, or cuprous aluminum tri-bromide, cuprous aluminum tetra-chloride, cuprous aluminum tetra-bromide as taught

by Hirai and Matsuura, to the scavenger pack (sachet) of modified Kobayashi, in order to ensure a more complete and rapid removal of the undesirable gases (CO and O_2) from the food package. One would have been further motivated to use a separate pack or sachet containing the absorbing compounds, to maintain the food safety by keeping the chemicals away from being in direct contact with food.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mercogliano et al (US 6521275 B1) teaches addition of CO and helium to preserve meat and later removing the same gases.

Woodruff et al (US 4522835) teaches addition of CO in an inert atmosphere to meat to preserve color.

Nippon Synthetic Chem Ind Co (JP 53060892 A) teaches the use of cuprous-aluminum-tetra-chloride to separate CO from mixed gases.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jyoti Chawla whose telephone number is (571) 272-8212. The examiner can normally be reached on 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (571) 272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jyoti Chawla
Examiner
Art Unit 1761

KEITH HENDRICKS
PRIMARY EXAMINER